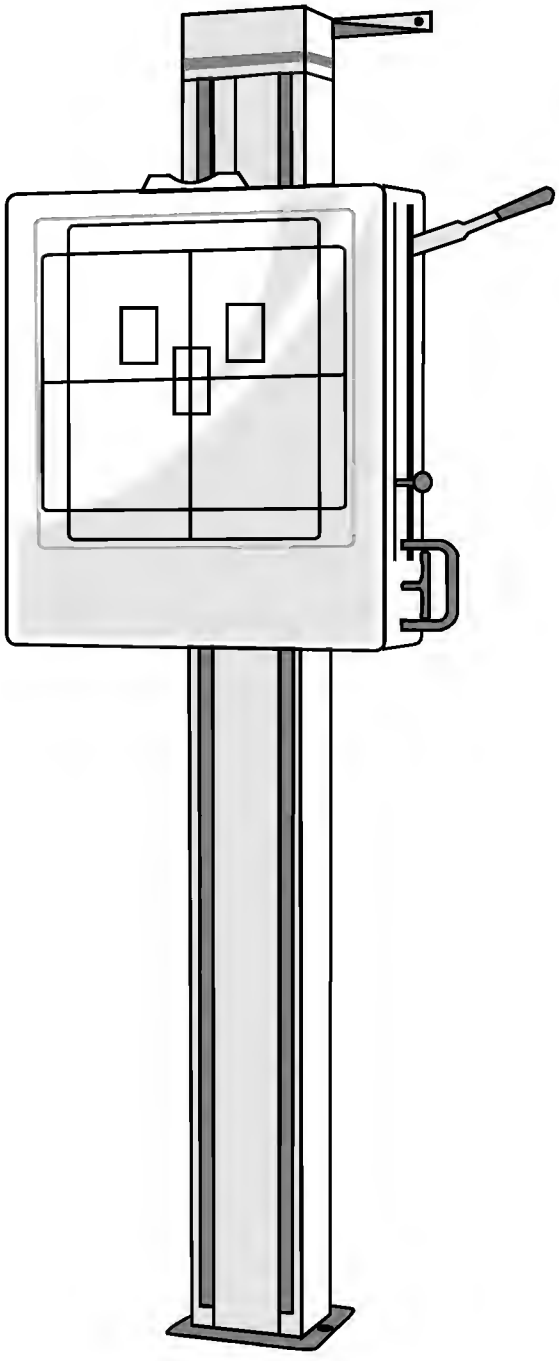
# Operating instructions KS 80-2



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# 1. RADIATION WARNING

## *Diagnostic X-Ray Systems*

X-Rays and Gamma-Rays are dangerous to both operator and others in the vicinity unless established safe exposure procedures are strictly observed.

The useful and scattered beams can produce serious or fatal bodily injuries to any persons in the surrounding area if used by an unskilled operator. Adequate precautions must always be taken to avoid exposure to the useful beam, as well as to leakage radiation from within the source housing or to scattered radiation resulting from the passage of radiation through matter.

Those authorized to operate, participate in or supervise the operation of the equipment must be thoroughly familiar and comply completely with the currently established safe exposure factors and procedures decribed in publications such as: subchapter J of title 21 of the Code of Fedral Regulations, "Diagnostic X-Ray Systems and their major Components" and the National Council on Radiation Protection (NCRP) No.33,"Medical X-Ray and Gamma-Ray Protection for Energies up to 10 MEV-Equipment Design and Use", as revised and replaced in the future.

Those responsible for the planning of X-Ray and Gamma-Ray Equipment installations must be thoroughly familiar and comply completely with NCRP No. 49, "Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma-Rays of Energies up to 10 MEV", as revised or replaced in the future.

Failure to observe these warnings may cause serious or fatal bodily injuries to the operator or those in the area.


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## 2. MECHANICAL - ELECTRICAL WARNING

### *Diagnostic X-Ray Systems*

All of the movable assemblies and parts of this equipment should be operated with care and routinely inspected in accordance with the manufacturer's recommendations contained in the equipment manuals.

Only properly trained and qualified personnel should be permitted access to any internal parts. Live electrical terminals are deadly; be sure line disconnect switches are opened and other appropriate pre-cautions are taken before opening access doors, removing enclosure panels or attaching accessories.

Do not remove the flexible high tension cables from the X-ray power supplies tube housing or high tension tranformer, and/or the access covers from the transformer until the main and auxiliary have been disconnected.

Failure to comply with the foregoing may result in serious or fatal bodily injuries to the operator or those in the area.

### *ELECTRICAL GROUNDING INSTRUCTIONS*

The equipment must be grounded to an earth ground by a separate conductor. The neutral side of the line is not to be considered the earth ground. On equipment provided with a line cord, the equipment must be connected to a properly grounded, three-pin receptacle. Do not use a three-to-two pin adaptor.

### *INSTALLATION AND ENVIRONMENT*

Except for installations requiring certification by the manufacturer per federal standards, see that a radiation protection survey is made by a qualified expert in accordance with NCRP 33, Section 6, as revised or replaced in the future. Perform a survey after every change in equipment, workload or operating conditions which might significantly increase the probability of persons receiving more than the maximum permissible dose equivalent.


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## 3. OPERATOR INSTRUCTIONS

This operator's manual contains explanations and instructions and maintenance requirements for the use of this device. It is the operators obligation to become familiar and understand all aspects of these instructions and user features before the device is used. In the event that there are certain technical terms and instructions which are not readily understood the device must not be used until further instruction and training is received. In this event contact the device supplier for assistance.

### *Safety Precautions*

This section contains information about safe mechanical operation. Users should be aware that if these procedures are not observed personel injury and or damage to the device may occur. It is the operators responsibility to ensure that the device is inspected and maintained in accordance with the required maintenance schedule.

### *Radiation Protection*

This device may only be operated by qualified personnel who are familiar with its operation. In all respects the operator shall adhere to applicable regulations and guides for radiation safety.

### *Maintenance*

The device contains parts which are subject to mechanical wear. These parts are covered in the Maintenance & Inspection Schedule. Failure to observe this procedure may result in a malfunction leading to unserviceability of the device and or personal injury.


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## 4. DESCRIPTION

The KS 80-2 is a vertical cassette holder with automatic cassette centering. The device is installed by mounting on the floor with support from the wall. It is especially suited for all radiography where the cassette must be held perpendicular to the floor. For example standing or seated radiographic exposures.

The cassette centering mechanism will accept inch and metric dimensioned cassettes inserted in either direction from 8" x 10" through 14" x 17" including 7" x 17" or 18 x 24 cm through 35 x 43 cm.

Automatic exposure - the KS 80 -2 is provided with mounting facilities to install an optional automatic exposure device.

X-Ray Grid - may easily be installed, exchanged or removed by the operator.


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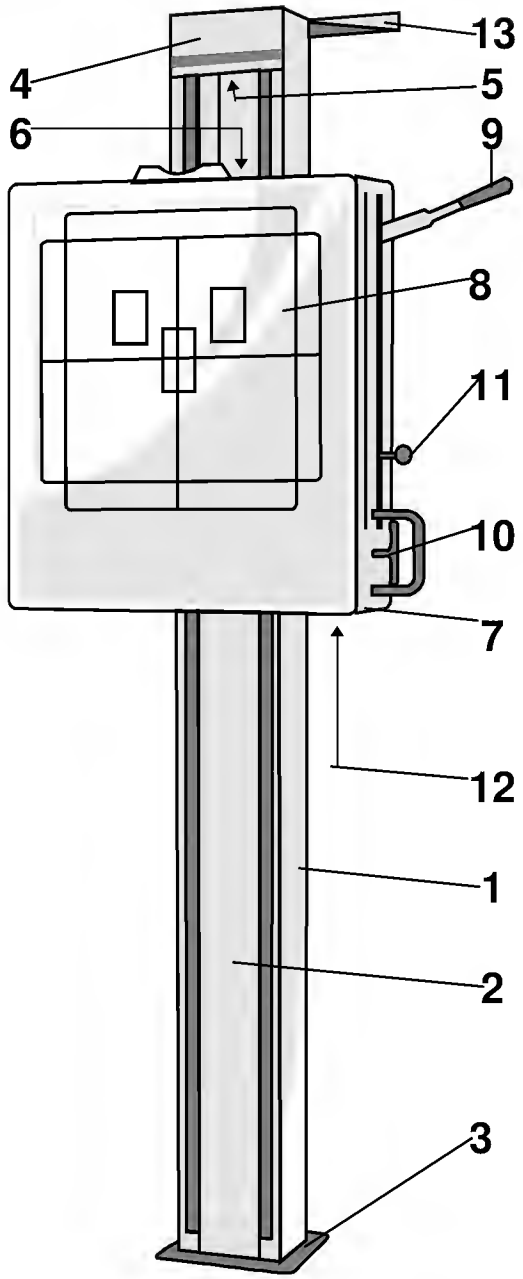
***Component Designation***




1. Column
2. Column inside cover
3. Base plate
4. Top cover
5. Rope pulley
6. Vertical carriage
7. Cassette centering mechanism
8. Front cover
9. Tension lever for cassette centering
10. Brake release for vertical travel
11. Cassette ejector
12. Front cover opening hole
13. Wall support bracket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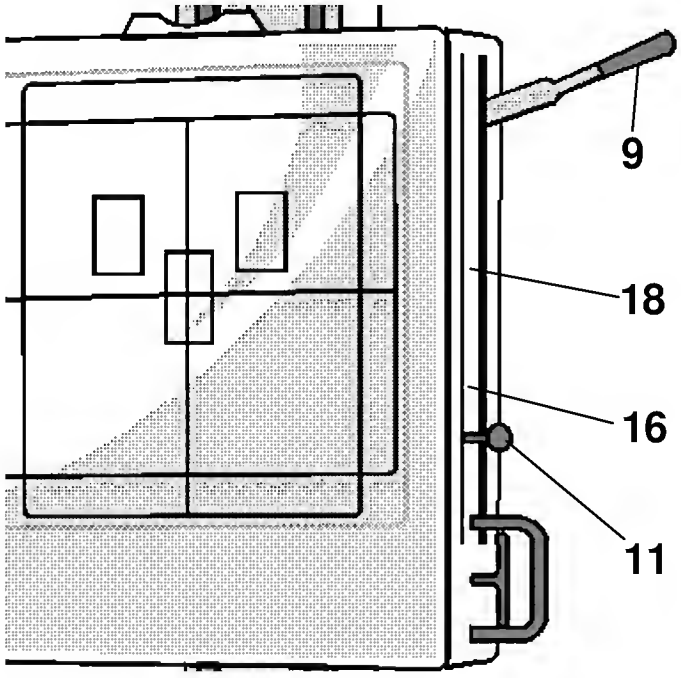
## 5. OPERATION

### *5.1 Inserting cassette*

Move tension lever Pos. **9** all the way down to the stop and latch it. The latching action is in this case, bring lever down to the stop, pull forward and release upward slowly. Insert the cassette deep enough into the cassette opening Pos. **16** so that the driver Pos. **18** can seize it. Unlatch the tension lever Pos. **9**, this is the reverse action of latching. Care should be taken as the lever is under pressure which will propel it upward. Move the tension lever all the way to the upper stop and latch it. The latching action is the same as in the lower position only in opposite direction to the stroke. The cassette has now been automatically centered and fixed in position. At the same time the cassette presence and size has been automatically signaled to the collimator.




**Warning!**

Before using the device make sure that the tension lever is always securely latched in either the upper or lower position. This can be checked by firmly gripping the tension lever and pushing it to the back of the device. Care should be taken when making this test especially with the tension lever in the lower position as it is under spring tension. In the event of a malfunction immediately stop using the device and call for service. Failure to observe this procedure may result in serious operator and or patient injury.

### *5.2 Removing cassette*

Position the tension lever in the down position and latch it. Pull the ejector Pos. **11** until the cassette can be grasped for removal.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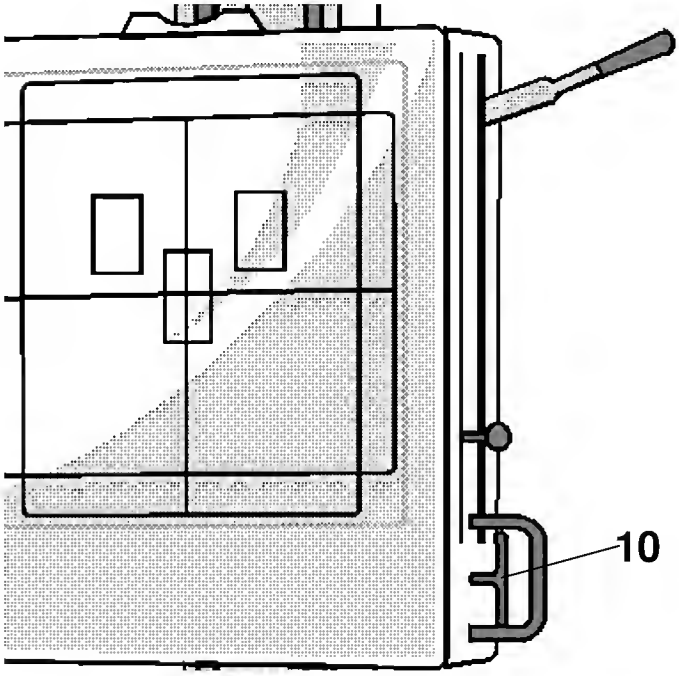
### *5.3 Vertical height adjustment*

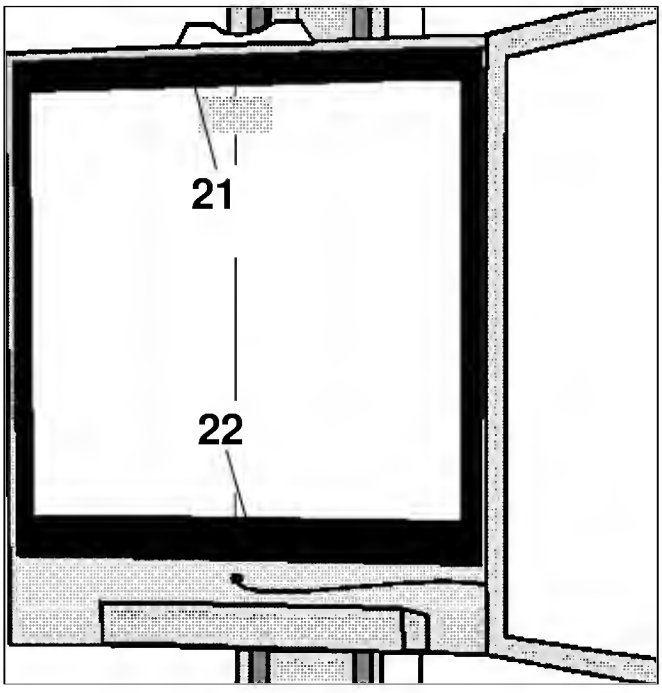
To re-position the operating height, pull brake lever Pos. **10**, to remove the brake.




Move the cassette holder to the desired position and release the brake lever.

### *5.4 X-Ray Grid installation, exchange or removal*

Open the front cover by the opening hole. To install the grid slid it up between the upper grid holder tracks Pos. **21**. Then lower grid to rest on the lower grid track Pos. **22**.





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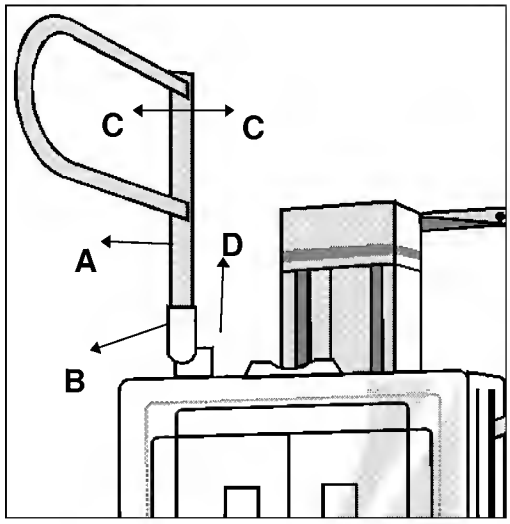
### *Overhead patient hand grip*

**Change / Adjustment:**

Pull strap **A** forward in direction of **B** and change into the desired position to **C**.

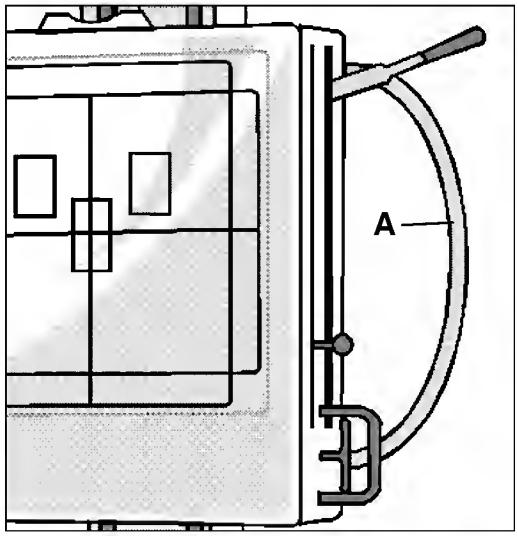
**Removal:**

Pull strap A to the top in the direction of **D**.




### *Side mounted patient hand grip*

The hand grips **A** will be mounted tightly to the back of cassette holder.

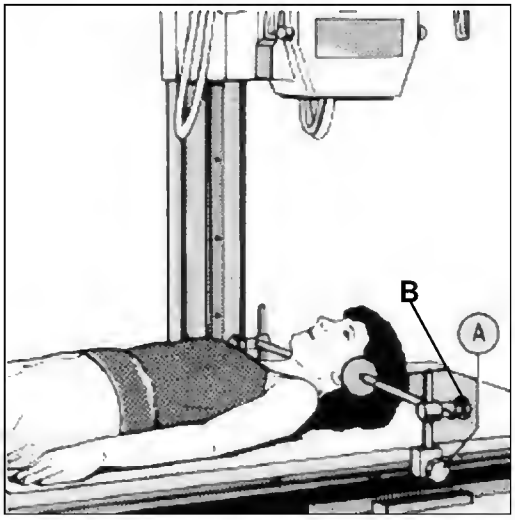



### *Hip Supports / Hip Clamps* **

The hip supports slide into profile rails of the table or Bucky. The supports can be clamped in any position desired. The patient`s head is fixed to the appropriate exposure position by cushioned plates on adjustable bars.

Handscrew **A**: Clamping Head Supports to table top or Bucky.

Handscrew **B**: Clamping of head holder





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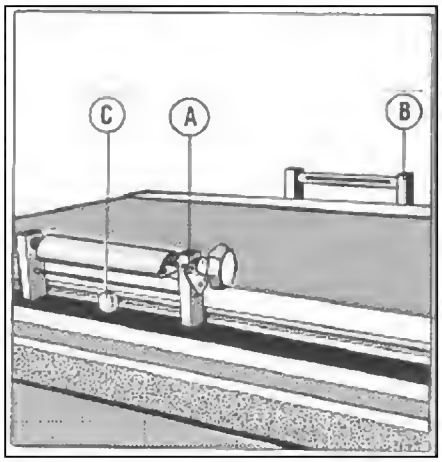
## *Compression Belt* **

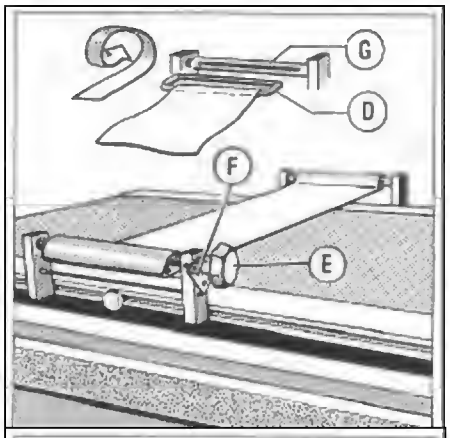



### *Compression Belt*

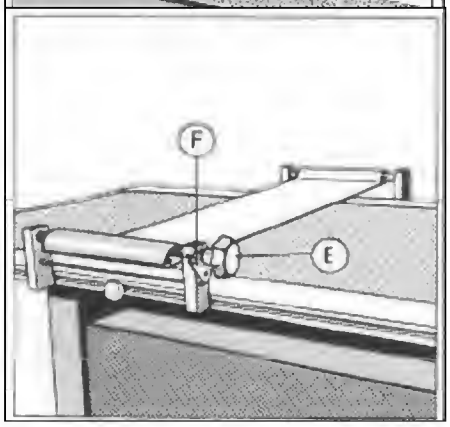
Fastening and application:

Slide support frame **B** into profile rail at wall side or into Bucky profile rail. Turn knob screw to clamp in position.

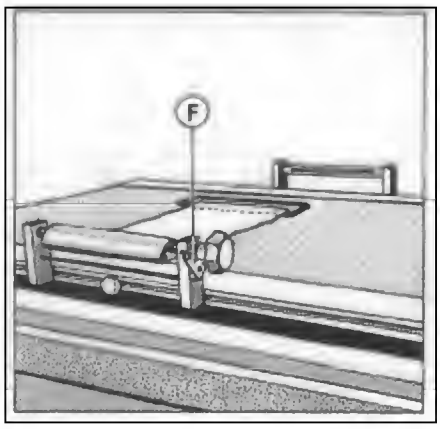
Slide tightener **A** into front profile rail ( operator side ). Turn hand screw **C** to clamp in working position opposit of **B**




Press ratchet mechanism **F**. Unroll belt and stretch across patient.




Guide belt through complementary frame and once around frame bar. Fix belt bracket **D** into slot of shaft **G**. Turn ratchet mechanism **E** to tighten belt.




Untightening:

Press locking lever **F**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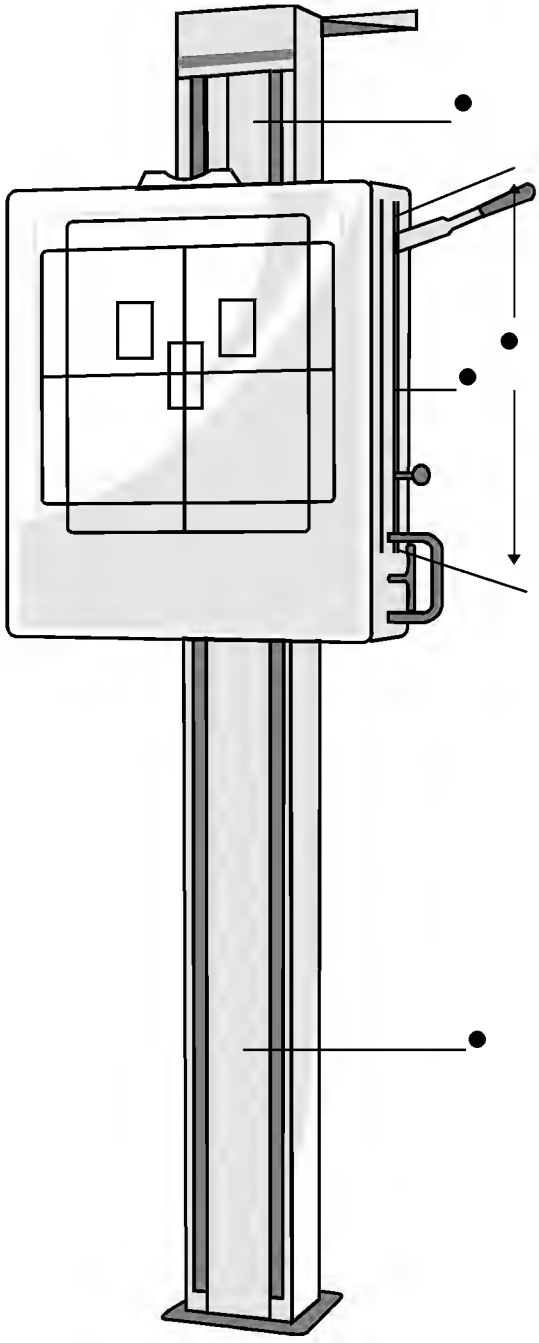
## 6. Danger of Injury for Operating Personnel



## Caution

Danger of injury to operator and or patient

The solid black markers indicate areas which have potential for pinching.

The silhouetted markers and doted lines indicate the area of rapid movement by the spring loaded tension lever.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# 7. REGULATION / GOOD OPERATING PRACTICE

## 7.1 Regulations

It is the responsibility of the user to ensure that all applicable government, local and other regulations pertaining to the operation of this device are followed.

## 7.2 Good operating practice

The safety of patients, operating personnel, and others as well as the efficient function of the device requires that periodic inspection and maintenance is done. The frequency of this procedure is every 6 months from the date of first use as described in the MAINTENANCE SCHEDULE.
It is the responsibility of the user to assure that this work is carried out. This service is available from the manufactures representative or other authorized service organizations. For a list, please contact the manufacturer. As a manufacturer we cannot guarantee the quality, effectivenes or safety of work performed by unauthorized parties. Use only genuine original replacement parts.

We recommend that detailed records be maintained of all work and inspections. These records should include the date, name, and signature of the person who performed the work.

Before operating the device after service has been performed the operator must check all aspects of function especially as they pertain to safety.

## 7.3 Cleaning and disinfection

Before cleaning or disinfecting the device, disconnect all electrical power.

Cleaning:
Use a soft cloth and a mild detergent.
DO NOT USE AN ABRASIVE CLEANER.

Disinfection:
Use diluted, aqueous disinfection solutions.


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## 8. PREVENTIVE MAINTENANCE SCHEDULE

### 8.1 Periodic Maintenance and Service

In order to obtain continued safe performance of this equipment, a periodic maintenance program must be established. It is the owner's responsibility to supply or arrange for this service.

Maintenance procedures for the KS 80-2 are required six months after the completion of installation, and every six months thereafter under average usage conditions; more frequently under heavy usage conditions. These maintenance procedures are listed in the back of this operating manual and in the Mounting and Maintenance Instructions.

### 8.2 Cleaning

This equipment should be cleaned frequently, particularly if corroding chemicals are present. On enameled metal and plastic surfaces, chromeplated trim, and the table top, use a cloth moistened with warm water (with or without MILD soap depending on nature of contamination). Do not use strong cleaners or solvents as they will damage the finish or blur the lettering.

At least, once a months external parts exposed tracks on which rollers move should be wiped to remove any foreign material that may have accumulated. DO NOT USE A DAMP CLOTH. Wipe the tracks with a cloth lightly soaked with light machine oil or WD-40.

To protect the finish, polish the equipment with PURE liquid paste wax. Do not use a wax containing a cleaning substance. Polish all enameled metal surfaces.

### 8.3 Technical Maintenance

Note: Defective parts must be replaced by genuine spare parts acc. to the spare part list. Use only non-acid grease for maintenance. Do not grease or oil sealed ball bearings.


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**CHECK AND / OR TASK**

| | |
|---|---|
| Floor and Wall Mounting | Check all floor and wall mounting bolts upon proper fit. Tighten if necessary. |
| Vertical Brake | Move the vertical carriage through its entire range of vertical travel. Check function of vertical brake and its holding force. The brake must hold 250N (55 pounds) minimum with the force measured at the hand grip. |
| Running Tracks | Clean running tracks of column with a towel and oil with non-acid vaseline. |
| Counterweight wire and Cassette-sizing-wire rope | Visually inspect the counterweight wire rope and the cassette-sizing-rope for wear, fraying, kinking and rust. If any broken wires are found, immeditate replacement of the wire rope must be carried out. |
| | **The counterweight wire rope must be changed every 3 years and the casette-sizing wire rope should be changed every 2 years. Also kinked wire rope and wire rope with any corrosion or rust at our near an anchor point should be replaced. Check for shiny spots which indicate wire rope wear.** |
| | To detect broken strands, run a cotton ball along the wire rope. The entire length of the wire rope must be checked. |
| | Lubricate the wire rope by wiping them with a cloth saturated with STP (or simular lubricant). Apply the lubricant lightly so that an oil film is just visible. Wipe off any excess. Make sure the portion of each wire rope which bears against the pulley groove is carefully lubricated. Solvents should never be used to clean the wire rope. |
| | Check tension of the cassette-sizing-wire rope and verify that the wire rope can not slip of the pulleys. |
| Tension lever latch | Check tension lever latch for traces of wear and safe operation. Special attention must be paid to the detent itself when the tension lever is locked in the detent, in the upper or down position. Make sure that the tension lever can not come out of the detent when hit by accident. If signs of unsafe operation and condition are detected, the tension lever latch must replaced immediately. Replace tension lever latch every 2 years. |


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## 8.4 Mantenance & Inspection Table

| Inspection or Maintenance | Interval period of work to be performed | | | |
|---|---|---|---|---|
| Inspect tension lever latch | every 6 Mon. | | | |
| Replace tension lever latch | | | every 2 Yrs. | |
| Inspect counterweight wire rope | | every 1 Yr. | | |
| Replace counterweight wire rope | | | | every 3Yrs. |
| Inspect Cassette-sizing wire rope | every 6 Mon. | | | |
| Replace Cassette-sizing wire rope | | | every 2 Yrs. | |
| Inspect floor and wall mounting | | every 1 Yr. | | |
| Inspect vertical brake | every 6 Mon. | | | |
| Inspect potentiometer drive belts | | every 1 Yr. | | |
| Inspect electrical cabels | | every 1 Yr. | | |


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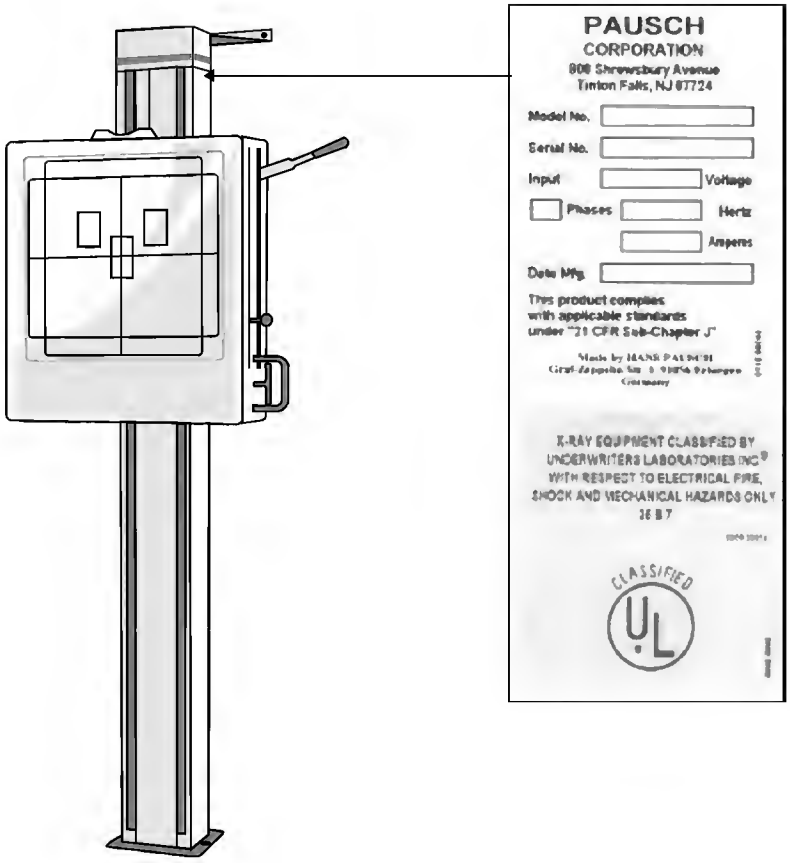
## *Name Plate Location*





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